

What is claimed is:

1. A disposable diamond die comprising:

a die core comprised of diamond; and

at least two pre-stressed rings of increasing diameter placed around the die core,
wherein the at least two rings form a container housing the die core.
2. The disposable die of claim 1, wherein the at least two rings are selected from split rings, washers, sleeves, bands, wires, braids, and combinations thereof.
3. The disposable die of claim 1, wherein the diamond is selected from synthetic diamond, natural diamond, polycrystalline diamond, and mixtures thereof.
4. The disposable die of claim 3, wherein the die is comprised of polycrystalline diamond.
5. The disposable die of claim 1, wherein at least one ring is comprised of a metal, a fiber reinforced composite, or a combination thereof.
6. The disposable die of claim 1, further comprising a retaining material positioned between the die core and a first of the rings or between a pair of consecutive rings.
7. The disposable die of claim 6, wherein the retaining material is selected from a spot weld, a thin metal film, a foil, an adhesive foil, a coating, an adhesive, a wedge, a lubricant, and combinations thereof.
8. The disposable die of claim 1, wherein a retaining material is located between each of the die core and a first ring, and each pair of consecutive rings.
9. The disposable die of claim 1, wherein the die has a diameter of about 1 to about 50 mm.
10. The disposable die of claim 1, wherein the die core and the rings have mating geometrical features.
11. The disposable die of claim 1, wherein the die core is generally cylindrical in shape.

12. A method for forming a disposable diamond die assembly, comprising the steps of:

providing a die core comprised of diamond;

providing at least two rings of increasing diameter around the die core forming a container housing, the die core and the container housing each having mating geometrical features; and

securing the die core in the container housing by contacting the respective mating geometrical features and causing a deformation in at least one of the mating features, the deformation providing mechanical forces sufficient to secure the die core in the container housing.
13. The method of claim 12, wherein the securing comprises press fitting of the mating geometric features.
14. The method of claim 12, wherein the securing comprises shrink fitting of the mating geometric features.
15. The method of claim 12, wherein the mating geometric features have dimensions that creates an interference fit.
16. The method of claim 12, wherein the diamond is selected from synthetic diamond, natural diamond, polycrystalline diamond, and mixtures thereof.
17. The method of claim 16, wherein the at least two rings comprise at least one of a metal and a fiber reinforced composite.
18. The method of claim 12, further comprising the step of heat-treating the die at a temperature of at least about 300°C.
19. The method of claim 12, further comprising providing a retaining device positioned between the die core and a first of the rings.
20. The method of claim 19, wherein the retaining device comprises one or more of a spot weld, a thin metal film, a foil, an adhesive foil, a wedge, a lubricant, and a combination thereof.